

**What is claimed is:**

1           1.     A method for controlling handoffs in a wireless communication system,  
2 comprising the steps of:  
3           receiving a location vector associated with a mobile unit; and  
4           determining whether to perform a handoff of the mobile unit based on the received  
5 vector.

1           2.     The method of claim 1, further comprising the steps of:  
2           transmitting the location vector to the mobile unit, wherein the vector includes location  
3 and time coordinates; and  
4           receiving a response from the mobile unit based on the transmitted vector.

1           3.     The method of claim 1, wherein the location vector comprises Global Positioning  
System (GPS) data.

1           4.     The method of claim 1 wherein the location vector comprises terrestrial data.

1           5.     The method of claim 2, wherein the determining step further comprises the step of  
2 determining whether to perform the handoff based on the received response.

1           6.     The method of claim 1, wherein the determining step further comprises the step of  
2 calculating a magnitude of the received vector, wherein the magnitude corresponds to a coverage  
3 area of a base station.

1           7.     The method of claim 6, wherein the determining step further comprises the steps  
2 of:

3           receiving one or more magnitudes corresponding to coverage areas of one or more other  
4 base stations;  
5           comparing the calculated magnitude to the received magnitudes; and  
6           determining that the handoff is necessary when one of the received magnitudes is less  
7 than the calculated magnitude.

1           8.     The method of claim 1, further comprising the steps of:  
2           receiving a plurality of received vectors associated with the mobile unit;  
3           calculating a magnitude of each of the plurality of received vectors;  
4           combining the calculated magnitudes into a combined magnitude; and  
5           determining whether the handoff is necessary based on the combined magnitude.

1           9.     The method of claim 8, wherein the determining step further comprises the step  
2 of:

3           receiving one or more magnitudes from one or more other base stations;  
4           comparing the combined magnitude to the received magnitudes; and

5 determining that a handoff is necessary when one of the received magnitudes is less than  
6 the combined magnitude.

1 10. The method of claim 1, further comprising the steps of:  
2 receiving a plurality of vectors associated with the mobile unit;  
3 detecting multipath propagation when at least two of the plurality of received vectors  
4 include identical location and time coordinates; and  
5 performing the handoff when multipath propagation is detected.

1 11. The method of claim 1, wherein the determining step further comprises the steps  
2 of:  
3 obtaining service quality data based on the received vector, wherein the service quality  
4 data includes at least one of an environmental and geographical condition related to a coverage  
5 area of a base station: and

6 determining whether to perform the handoff based on the service quality data.

1 12. The method of claim 11, wherein the obtaining step further comprises the steps of:  
2 extracting at least one of a location and time coordinate from the received vector; and  
3 retrieving the service quality data from a database based on the extracted information.

1 13. The method of claim 12, wherein the retrieving step further comprises the step of:  
2 retrieving a geographical condition from the database based on location coordinates  
3 extracted from the received vector, the retrieved geographical condition including at least one of:  
4 topographical data, structural data, and known reflection path.

1 14. The method of claim 12, wherein the retrieving step further comprises the step of:  
2 retrieving an environmental condition from the database based on time information  
3 extracted from the received vector, the environmental condition selected from the group  
4 consisting of at least: rain, wind, temperature and humidity.

1 15. The method of claim 1, further comprising the steps of:  
2 receiving a plurality of received vectors associated with the mobile unit;  
3 estimating future location coordinates for the mobile unit based on the plurality of  
4 received vectors; and  
5 retrieving a geographical condition from a database based on the estimated future location  
6 coordinates.

1 16. The method of claim 1, wherein the received vector further comprises time  
2 information.

1 17. The method as in claim 1 further comprising the step of generating the vector at  
2 the mobile unit.

1           18.     The method as in claim 1 further comprising the step of generating the vector at a  
2 base station.

1           19.     The method as in claim 1 further comprising generating the vector at a GPS  
2 satellite.

1           20.     A device for controlling handoffs in a wireless communication system,  
2 comprising:

3                 means for receiving a location vector associated with a mobile unit; and

4                 means for determining whether to perform a handoff of the mobile unit based on the  
5 received vector.

1           21.     The device of claim 20, further comprising:

2                 means for transmitting the location vector to the mobile unit, wherein the vector includes  
3 location and time coordinates; and

4                 means for receiving a response from the mobile unit based on the transmitted vector.

1           22.     The device of claim 20, wherein the location vector comprises Global Positioning  
2 System (GPS) data.

1           23.     The device of claim 20 wherein the location vector comprises terrestrial data.

1           24.     The device of claim 21, further comprising means for determining whether to  
2 perform the handoff based on the received response.

1           25.     The device of claim 20, further comprising means for calculating a magnitude of  
2 the received vector, wherein the magnitude corresponds to a coverage area of a base station.

1           26.     The device of claim 25, wherein the means for calculating further comprises:

2                 means for receiving one or more magnitudes corresponding to coverage areas of one or  
3 more other base stations;

4                 means for comparing the calculated magnitude to the received magnitudes; and

5                 means for determining that the handoff is necessary when one of the received magnitudes  
6 is less than the calculated magnitude.

1           27.     The device of claim 20, further comprising:

2                 means for receiving a plurality of received vectors associated with the mobile unit;

3                 means for calculating a magnitude of each of the plurality of received vectors;

4                 means for combining the calculated magnitudes into a combined magnitude; and

5                 means for determining whether the handoff is necessary based on the combined  
6 magnitude.

1           28.     The device of claim 27, further comprising:

2                 means for receiving one or more magnitudes from one or more other base stations;

3 means for comparing the combined magnitude to the received magnitudes; and  
4 means for determining that a handoff is necessary when one of the received magnitudes is  
5 less than the combined magnitude.

1 29. The device of claim 20, further comprising:  
2 means for receiving a plurality of vectors associated with the mobile unit;  
3 means for detecting multipath propagation when at least two of the plurality of received  
4 vectors include identical location and time coordinates; and  
5 means for performing the handoff when multipath propagation is detected.

1 30. The device of claim 20, further comprising means for obtaining service quality  
2 data based on the received vector, wherein the service quality data includes at least one of an  
3 environmental and geographical condition related to a coverage area of a base station, and means  
4 for determining whether to perform the handoff based on the service quality data.

1 31. The device of claim 30, further comprising means for extracting at least one of a  
2 location and time coordinate from the received vector and means for retrieving the service quality  
3 data from a database based on the extracted information.

1 32. The device of claim 31, wherein the means for retrieving further comprises means  
2 for retrieving a geographical condition from the database based on location coordinates extracted  
3 from the received vector, the retrieved geographical condition including at least one of:  
4 topographical data, structural data, and known reflection path.

1 33. The device of claim 31, wherein the means for retrieving further comprises means  
2 for retrieving an environmental condition from the database based on time information extracted  
3 from the received vector, the environmental condition selected from the group consisting of at  
4 least: rain, wind, temperature and humidity.

1 34. The device of claim 20, further comprising:  
2 means for receiving a plurality of received vectors associated with the mobile unit;  
3 means for estimating future location coordinates for the mobile unit based on the plurality  
4 of received vectors; and  
5 means for retrieving a geographical condition from a database based on the estimated  
6 future  
7 location co-ordinates.

1 35. The device of claim 20, wherein the received vector further comprises time  
2 information.

1 36. The device as in claim 20 further comprising means for generating the vector at  
2 the mobile unit.

1           37.    The device as in claim 20 further comprising means for generating the vector at a  
2 base station.

1           38.    The method as in claim 20 further comprising means for generating the vector at a  
2 GPS satellite.